

An aircraft engine face radar cross section analysis is computed using a finite element based approach. A finite element model is only created for a periodic slice of the aircraft engine face. The system matrix of the finite element model is then transformed into a series of independent modes in a block diagonal matrix using a Discrete Fourier Transform. Each of the independent modes is then solved using an “infinite” pipe arrangement to remove the effects of rim scattering and the incident wave. The solved independent modes are summed together to determine the scattered electromagnetic field for the aircraft engine face. The scattered electromagnetic field is then used to calculate the radar cross section of the aircraft engine face.

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